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RECENT SURVEYS IN THE FAR NORTHWEST.

A LARGER and brighter future is dawning for the Canadian dominion. New activities have been created in the east, and in the west has been established a depot through which great wealth from the orient is passing. The prairies of Winnipeg are as rich as those of Dakota, and the plains of Alberta and Athabasca more fertile than the plateaus of Wyoming and Montana; nowhere in the temperate zone is forest more luxuriant than in British Columbia; the finding of gold, silver, platinum, lead and coal in that and neighboring provinces argues for their speedy settlement; the salmon fisheries of the Fraser are sources of enormous profit; the woods and hills have not been hunted out for furs, and east and west have been put into touch by the operation of the Canadian Pacific Railroad. It is with a view to "taking stock" of her resources and possibilities that the government of Canada has laid off experimental farms and put surveys afoot. Geography is gaining from the latter, for although the operations of the Hudson Bay Company in the north have lead to wider information regarding the country than we should have had to-day without them, the maps are still imperfect, and of physical features we have but a general knowledge.

The most adventurous of these journeys was made in 1887-8 by William Ogilvie, Do-

minion Land Surveyor, in which he covered 2,700 miles of territory and surveyed 1,900 miles of it. His astronomical observations changed the international boundary so as to bring a part of Forty Mile Creek into Canada—a proceeding for which the United States will not thank him very much, although most of the gold bearing districts on this stream are still within Alaska. With four white men he landed at the head of Taiga Inlet, Alaska, the United States gunboat Pinta, taking his boats and outfit to that point from Chilkoot, and in June, 1887, he sent off Indians with his packs—dishonest fellows who demanded double wages after an extortionate sum had been agreed on. It was only by withholding payment until all the work was done that he succeeded in getting his freight—six tons of it—to the headwaters of the Lewes, for the Tagish Indians on the land side of the Coast Range are in dread of the Alaskan Chilkoots who arrogate to themselves the right to all plunder and profit that can be made out of white men. The pretensions of this trades union Mr. Ogilvie did what he could to weaken by ridicule and by insisting that the British Indians had at least the right to all that they could make on their own side of the mountains.

These Indians are unreliable in many ways. They cannot even be called upon to give in-

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formation, partly because they want money for that service but more because they fear that the white men intend a hostile invasion of their country; and if persuaded to speak they are liable to fib. At one time when the surveyor was getting an observation for azimuth he told an Indian that he was looking for a star. The Indian, who had just been asked for guidance to a river said there was no use for him to say anything, for a man who could see stars in the daytime could see the whole river. The Indians engaged in catching salmon below Rink Rapids were declared to be the poorest and most unintelligent savages that it had been the explorer's lot to meet. Wishing to buy tea and other matters they offered in payment tin tags from tobacco plugs that, they said, were given to them by the Coast Indians in exchange for furs.

The party had two basswood canoes of 40 inches beam, 18 inches deep, 18 and 19 feet long, made water tight by canvas decks and each carrying two men and 1,400 pounds of freight; but they were insufficient, so a heavier boat was built from native timber, the time required for its construction causing such delay that July was half spent before the party got fairly under way down the Lewes. The passage of the upper rapids was made in safety though the current runs at $12\frac{1}{2}$ miles an hour. The cañon of White Horse Rapid below is avoided by a portage road along its edge for the descent by water is perilous. Farther down are the Five Finger or Rink Rapids, partly dammed by rocky islets, but below this point Mr. Ogilvie believes the Lewes to be navigable for steamboats. This river heads in a chain of lakes—Lyndeman, Bennet, Nares, Bove and Marsh—and there is a widening 31 miles long called Lake Labarge, after a man employed by the Western Union Telegraph Company, in 1867, to survey for a telegraph line to connect America and Europe by way of Alaska, Bering's Strait and Siberia. The successful operation of the Atlantic cable induced the recall of Mr. Labarge after he had got as far as the Yukon. South-east from

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these sources, hidden behind the tall mountains, is Lake Teslinto, from which is given off the river of that name, an affluent of the Lewes, reported to be navigable and probably longer than the main discharge above the junction. If this prove true it gives the Lewes-Yukon a length of 2,200 miles, two-thirds of that distance being open to boats for five or six months in summer. This longer arm is called by Schwatka the Newberry.

Just below the discharge of the Lewes into the Yukon is the ruin of Fort Selkirk, built over forty years ago for Hudson Bay Company's service by Robert Campbell, who was "run out" of the country by a band of jealous and marauding Indians, to their own loss, had they but sense to know it. After notifying him that he would be shot if he remained twenty four hours they fired the buildings, reducing them to shells of masonry. Campbell secured a force of local Indians and hastened back to take revenge, but the rogues had sped away on a light foot, so he crossed the country to the Mackenzie and wintered at Fort Simpson. He had undertaken a survey of the Yukon and Lewes in 1843, but his men were frightened from their work by reports of cannibals, and he was obliged to return southward. The fact that rumors like this came also to Mackenzie when, a hundred years ago, he explored the river that bears his name, and that they were coupled with tales of witches and monsters at the north, makes it probable that the Indians were but repeating tribal traditions, though there were hostiles enough around them.

On the 13th of August Ogilvie's party reached the Yukon or Pelly, and there met Dr. Dawson, who set off toward the coast four days later. The Yukon was now followed down to Forty Mile Creek where coarse gold was found in 1886 and where surveys were made that, according to Ogilvie, pushed the Alaska boundary twelve miles to the westward. As it was now the middle of September it was decided to go into winter quarters—a kind of Humboldt house let into

a hillside and built of logs heavily blanketed with moss, with two ventilators in the roof and an oven and fireplace of stone cemented with clay. At no time during the winter did the thermometer in this house fall below 48° , though the ventilators were never shut even when the cold was 50° below outside. The arctic phenomenon of emerald green clouds was seen during a fall of ice crystals that winter; the explosion of a huge meteor was heard and the aurora was twice visible in the day time, one of the party declaring also that he heard crackling sounds proceeding from it.

As soon as spring opened the survey was resumed and at the boundary trees were blazed and marked C and A on their east and west sides for Canada and Alaska. About a hundred miners had wintered near the party, some of them at Belle Isle where Schwatka had fixed the international boundary, and they showed anxiety on learning that they were on Canadian soil, fearing lest their claims might be invalidated by the more stringent mining laws of the Dominion. These laws were explained to their satisfaction and they resumed work. Many of them had suffered from scurvy during the winter, but only one had died of it. Some of the miners who had been up Forty Mile Creek alleged that its name belied it and that it was at least 100 miles long. There are bad rapids near the mouth and an Indian who upset in them in the summer of 1887 deliberately cut his throat and sank, doubtless thinking that his relatives and valuables had gone to the bottom on the capsizing of his boat, though his family was rescued by miners. The chief of this Indian's band went to the trading post and demanded money, declaring that the white men had caused his death by moving their stores down the river, thus compelling Indians who wished to deal with them to shoot the rapids. He collected no damages except what he may have taken away on his person.

Three or four little stern wheel steamers ascend the Yukon from its mouth to this point, 1,650 miles, experiencing no trouble

from the current except at the confluence of the Porcupine. They do but little business. The development of the Alaska Fur Company has exerted such a depressing effect on the trade of the Hudson Bay Company that the latter has abandoned some of its frontier posts. This is strange, for the older company is noted for its fairness to the Indians, while Americans are unfortunately reputed to cheat them by trading inferior clothing and blankets for their furs. At the mouth of Stewart River a miner was encountered who reported that in prospecting along the Beaver he discovered that it contained a fine fall 100 or 200 feet in height, and that it rose among mountains of shale and terraces of gravel on which was a low and open growth of timber. During this journey he had met neither white men nor natives. It was thought likely from his narrative that the Stewart and Beaver are navigable for light draught steamboats. The Deer or Londac River, falling into the Yukon a little below the Stewart, is exceptionally clear, and from another prospector it was learned that this stream had its source among snowy mountains.

From rings of growth in trees not over four inches in diameter it was found that they were over 150 years old. Mr. Ogilvie thinks that the arable land of the Yukon basin does not exceed a half million acres, say 2,000 farms, and that it could only be tilled to advantage in the event of mining settlements being established here, when local supplies would find a ready market. There is no tundra, but there are thousands of acres where the soil is covered with moss that prevents the frost from leaving the ground, and where fallen leaves and timber seem almost as fresh as if laid in it but yesterday. In fact, frost remains in much of the ground through the year, even where there is some wood growth. It is so in the low country about Hudson Bay, and it was so in the winter quarters of this exploring party, for in digging the foundations for their house they reached frozen earth two feet below the surface. Though the timber at this place was

of good age it was small, and evinced slow development. The largest plank it yielded were 31 feet long, but sufficient material for house building can be had from spruces and balsams of slighter growth. There are no extensive forests and the wooded area is perhaps not over half so large as that of the arable land, but like the latter it is doubtless equal to all demands that a fixed population is likely to make on it. The climate seems to preserve the timber, and wood hewn in 1872 appeared to have been cut but a year before.

Coal was seen in three foot seams near Five Finger Rapids, and along Coal Creek there are beds over seven feet in thickness. Specimens of coal were found in rolled pebbles on the Yukon, and the Indians were surprised to see these pebbles burn. Gold, silver and lead are found, the former at such frequent intervals that great wealth will undoubtedly be discovered in coming years. All the gold, thus far, has been obtained from placers, but its observation *in situ*, in quartz seams, has been reported. At a point on the Yukon known as Cassiar Bar four miners took out \$6,000 worth in thirty days during the summer of 1886. Next year the placer was almost exhausted, but one of the men, who had been mining for twenty-five years, said that he never saw a country where the metal was so plentiful, yet so evenly distributed, no place being very rich and none very poor. Many bars that yield \$10 a day in "fine" gold are passed by in the haste to reach a spot like Forty Mile Creek where coarse gold, or gold in large grains, is found. The exact incomes made by the miners could not be ascertained as they resent inquiry, especially by government officials whom they regard as a sort of spies. It is believed however, that as high as \$100 a day per man has been made in the diggings, and Stewart River has yielded over \$100,000. A few men hired the engine of the steamboat New Racket in 1886 to work pumps for sluicing, and with the crude, home-made machinery fitted to the engine the miners cleared \$1,000 each in less than a month and paid an equal

amount to the owners of the boat. The scarcity of small streams makes it necessary to carry on sluice mining by means of pumps. Platinum is found with gold at many points in the Yukon basin.

The only white men in this region who are engaged in business other than mining are Harper & McQuestion, merchants at Forty Mile Creek, whose operations are thought to be not far from \$60,000 a year. They were unprepared for the rush to the diggings in 1886, and as supplies ran short the colony was on the verge of starvation for several months. They buy furs on commission for the great companies and sell provisions to the miners at rates that would be considered exorbitant in the east, but their goods have to be carried for great distances and they retail below the prices charged in California and Colorado during the gold rushes in those States. They sell flour at 17½ cents a pound; bacon at 40 cents; sugar, 30 cents; tea, \$1.25; beans, \$18 a bushel.

The principal furs are those of the silver, black and red fox, lynx and sable. Game is growing scarce, partly because the Indians destroy it for the mere pleasure of killing, slaughtering, when they have plenty of meat on hand, and in seasons when the animals are thin or are breeding. Cariboo, moose, bear, wolves, hare, martens, big horns and mountain goats are found; birds are not numerous, and even the trout and salmon are soft and poor, the Indians sometimes catching them to feed to their dogs. These Indians are few in number, the Chilkoots on the coast numbering but 138, the Tagish 112, the bands along the rivers 482, of whom 346 are on the Canadian side. The members of Charley's band on the lower Yukon, who were Christianized and taught to read and sing several years ago, hold Sunday services among themselves, singing hymns in their own tongue and taking their religious books with them whenever they go on long journeys.

In March, 1888, Mr. Ogilvie left his winter quarters and set off for the Mackenzie by way of the Tat-on-duc, Porcupine, Bell, Trout, and Peel rivers, minus, for a time, two of his

men who had fallen ill; plus several dogs and Indians. It was a wild country that he traversed, with scrubby wood on the lower slopes of mountains 4,000 and 5,000 feet high, chill rivers pouring through deep cañons, strata thrust vertically out of the earth as in the Garden of the Gods, weathering into castellated forms, and swamps and ponds where ice formed in summer. Near the 'Tat-on-duc there is a swamp from which sulphuretted hydrogen is given off in such volume as to be noticed for miles to leeward. High ground above this river revealed a grand panorama of snowy mountains, "the profound stillness and vast solitude impressing one as perhaps few other scenes in the world would."

The Indians hereabout are dressed like Eskimo in winter, and live in tents of deer-skin stretched on willow frames, oval on the ground plan, dome shaped in section, banked with snow on the outside and open at the top for the escape of smoke. They sometimes secure cariboo and moose as the Africans do their larger game, by beating them up in the woods and chasing them into a runway that narrows until it ends in a deep snow pit where they are easily dispatched. Ogilvie River, flowing eastward, was not followed from this point, as the Indians averred that nothing could succeed in the descent of its falls and passage of its rapids. The red men were in such terror of alleged cannibals, called the Na-Hone, that they could not be persuaded to go beyond the Porcupine, though they could not tell exactly where the Na-Hone were to be met. They only knew that they require no clothing, fire or shelter, and eat human beings raw. Of course this tribe is mythical.

The labor of hauling his supplies over rocks and ice was so severe that Mr. Ogilvie and his companions camped for over a month on a northward flowing branch of the Porcupine, waiting for the ice to break up so that the canoes might be employed, for they were now beyond the Arctic circle and had reached a lower country. Timber, however, was strong here and game more abundant than in the mountains, but the cariboo were found to be

so infested with parasitic larvæ beneath the skin that the meat was not eaten.

Progress toward the Mackenzie was slow because of floe ice in the streams and the depth of snow on the water shed. On the 4th of April the thermometer marked 37° below zero, but as the summer advanced the weather became mild, and in May the mercury had climbed to 55°. Geese, swans and cranes appeared; flies and mosquitos became a nuisance. Some Indian hunters served as guides to La Pierre House, and were surprised to see the explorers crack through the rotting ice with their basswood canoes, for the Indian boats of greased skin stretched on willow frames were incapable of such service. This was on Bell River, on the 6th of June. La Pierre house is one of the remotest of the Hudson Bay Company posts, and is somewhat migratory, as its position is changed whenever the wood gives out in its neighborhood. Coal was seen near Trout River, and asbestos also, but geological and mineralogical observation was hindered by the snow that lay deep enough to conceal not only much of the ground but parts of the streams, the water flowing through arches beneath the drifts.

Fort McPherson was reached on June 20, and there was an easy descent from there to the Mackenzie. The homeward journey by way of Great Slave and Athabasca Lakes was not especially eventful except for observations that determined the position of the Rocky Mountains more truly than previous surveys and the confirmation of a belief in the wide extent of navigable waters in the north, the Mackenzie itself being clear for large vessels from the delta to the rapids on Great Slave River, 1,273 miles. Near Buffalo River, a branch of the Peace, there were indications of petroleum; bitumen and natural gas were also found. The soil of the Mackenzie basin is as capable of supporting an agricultural population as that of Norway, no doubt, while timber is sufficient for fuel and large enough for cabins. Fish are plenty. A few wood buffalo remain, but they are as ruthlessly hunted as the buffalo of the prairie

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and as there seems to be no protection for
fur bearing animals they also are decreasing.
The white population at the northern posts
is about 250; the Indians number about
4,000. By sledge, canoe and wagon Mr.
Ogilvie travelled from Fort Chipewyan to
Calgary, reaching that town on December
29, whence he returned to Ottawa by rail and
began the preparation of such data as will
"almost complete the map of the extreme
northwest of the Dominion."

While Mr. Ogilvie was conducting this
survey George M. Dawson was also going
over the Yukon district with a view to
gathering information as to climate, flora,
fauna, geology, mineralogy and ethnology.
Entering the basin from the Pacific in May,
1887, by the Stikine River, Dease Lake—the
latter frozen in early June—Liard River,
Frances River and Frances Lake, he ascend-
ed the Lewes, from the head waters of which
he crossed the Chilkoot Pass to Lynn Canal,
reaching the coast on September 20, having
accomplished a distance of 1,322 miles, thus
circumscribing an area of over 63,000 square
miles that is still largely *terra incognita*. The
cost of freighting his supplies from Wrangell
to Dease Lake was \$195 a ton, and "the
result of such high prices is to discourage
prospecting in the district and to retard its
further development." He christened a num-
ber of streams and mountains during the
journey, but was careful to apply names
where no others had previously been given,
and he blames Lieutenant Schwatka for
giving new titles to places that had borne
other names for forty years.

His report declares the Coast Range to be
wide, with peaks exceeding 8,000 feet in
height, while the Rockies reach 9,000 feet in
some instances. The true source of the
Yukon, or point from which it measured
longest, is held to be at the head of Hotil-
inqu River, and its drainage area is about
330,000 square miles—half that of the
Mackenzie and about a quarter that of the
Mississippi. A wagon road might easily be
built from the head of the Stikine to the
lakes near the head of the Lewes, thus giving

a fourth entrance to the region that is now
approached only by Chilkoot Pass, Peel
River and Behring Sea, the first used by
miners, the second by the Hudson Bay Com-
pany, and the third by Alaskan traders. The
lower Yukon country is foggy and snow
lies eight feet deep through the summer at
Nulato, but the climate improves as the river
is ascended, and the snow fall becomes
lighter.

A comparatively mild temperature is en-
joyed on the western coast, the average at
Wrangell showing 42° as against 17° at Fort
Yukon, while winds from the warm Japan
current keep the western slopes of the moun-
tain ranges greener and moister than the
eastern. On the Stikine, wheat, barley and
potatoes are grown; even at Fort Yukon
barley and potatoes have matured and cattle
pastured, so it is probable that hardy crops
can be raised and grazing afforded for 1,000
miles north of Vancouver. Though frost
sets in early, and sand, clay, gravel and vol-
canic ash predominate in the soil, the isother-
mal lines sweep high to the northward in
this region, giving in latitude 67° the flora
of latitude 55° at Hudson Bay. At Fort Sel-
kirk there is "an attractive landscape decked
with well grown forests and slopes of smiling
meadow, while in the same latitude in Hud-
son Strait we find a barren waste of rocks
and ice."

The whole region is at present thinly
settled and the native tribes show the effect
of nature's harshness in short stature, stoop-
ing attitude, sore eyes, lack of vivacity and
strength and low intelligence. They are
stoical, superstitious and not very revenge-
ful, but inter-family feuds sometimes extend
through a series of years, resulting in many
murders. Little affection is shown, the sick
and aged are neglected, divorce is easy and a
man is as free to sell his daughter as his dog.
All are migratory and live in wretched
shelters of brush, skin and canvas. The
whole number of Indians in both the
Mackenzie and Yukon basins is probably not
over 5,000. The scenery throughout this
region, though hardly equal to that of British

Columbia, is grave but picturesque, and there are large glaciers along the Stikine and Alaskan fiords. The lakes that the Yukon rises in are of great beauty; there are almost vertical crags on Bennet Lake 3,000 feet high and many of the river cañons are wild and deep.

The surveys of Ogilvie and Dawson are useful in disproving the popular notion that all the continent beyond our border is bleak

and incapable of tenancy. When the prairies are occupied, and when there shall be need to develop the mineral resources of the Yukon and Mackenzie, millions will find homes and thousands will find wealth in what is now a wilderness. With the coming of that time, whether her political position be provincial or autonomous, English or American, royal or republican, Canada will take an important part among the nations.

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